No. 633,221. Patented Sept. 19, 1899.

M. SORLLE & H. J. BAILEY.

GRAIN DRIER.

(Application filed July 6, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

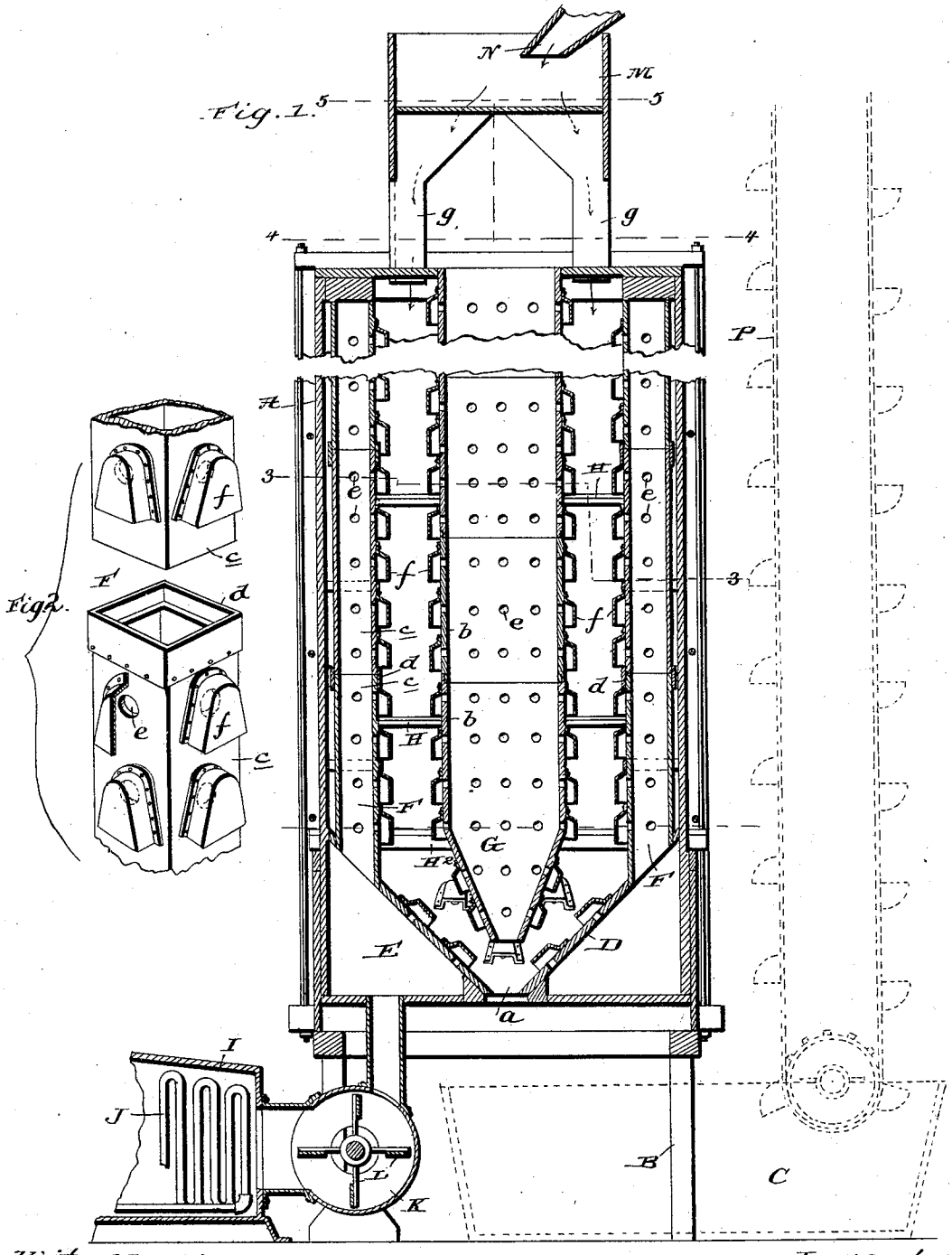

Fig 2.

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Fig. 3.

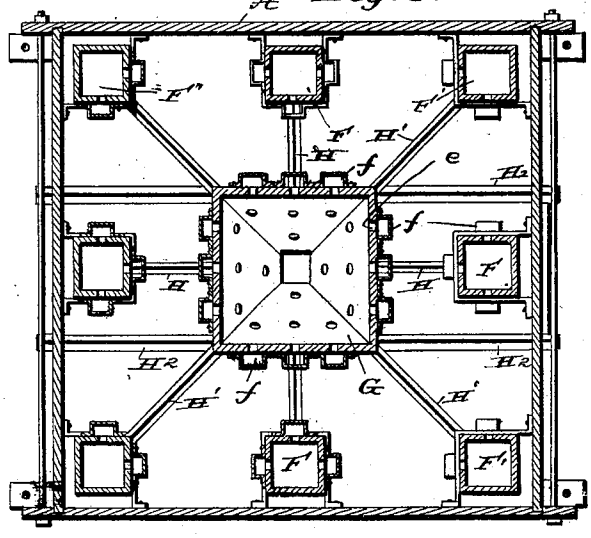
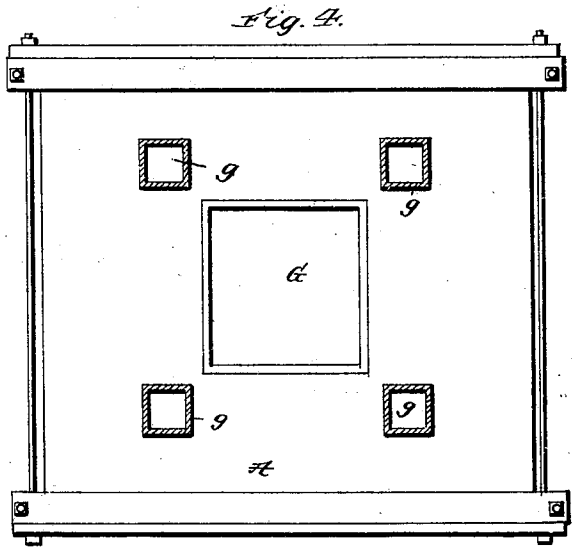


Fig. 4.



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GRAIN DRIER.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

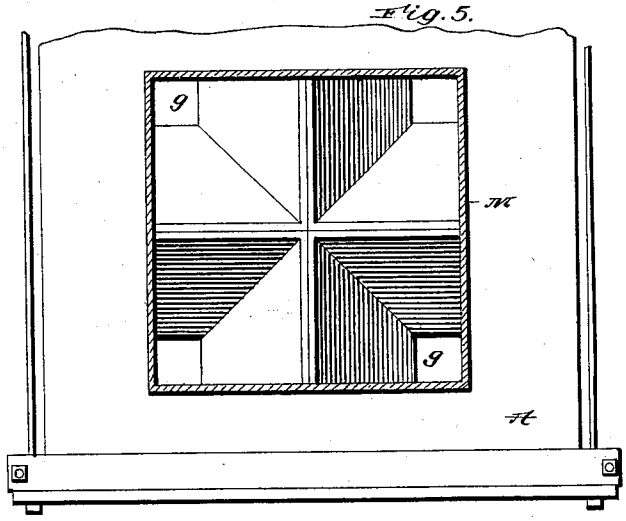


Fig. 6.

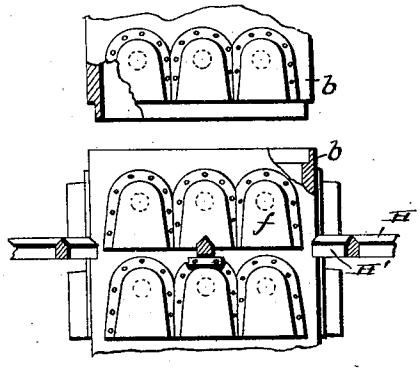


Fig. 7.

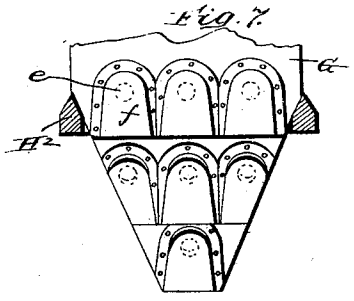


Fig. 8.

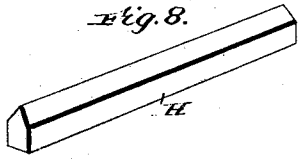
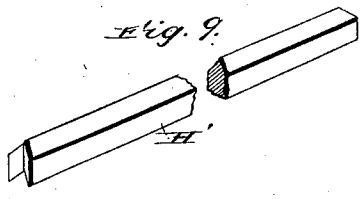


Fig. 9.



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UNITED STATES PATENT OFFICE.

MARTIN SORLLE AND HENRY JAMES BAILEY, OF NEW ORLEANS, LOUISIANA.

GRAIN-DRIER.

SPECIFICATION forming part of Letters Patent No. 633,221, dated September 19, 1899.

Application filed July 6, 1899. Serial No. 722,990. (No model.)

To all whom it may concern:

Be it known that we, MARTIN SORLLE and HENRY JAMES BAILEY, citizens of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Grain-Driers, of which the following is a specification.

Our invention relates to grain-driers; and it consists in the peculiar and advantageous construction hereinafter described, and particularly pointed out in the claims appended.

In the annexed drawings, Figure 1 is a vertical section of our drier. Fig. 2 comprises disconnected and broken perspective views of sections of which the air-induction flues of the drier are composed. Figs. 3 and 4 are transverse sections taken in the planes indicated by lines 3 3 and 4 4, respectively, of Fig. 1. Fig. 5 is a slightly-enlarged section taken in the plane indicated by line 5 5 of Fig. 1. Fig. 6 comprises disconnected and broken views of sections of which the air exhaust or discharge flue of the drier is composed. Fig. 7 is an elevation of the lower contracted end of the same. Fig. 8 is a perspective view of one of the braces interposed between the sides of the air-discharge flue and certain of the air-induction flues. Fig. 9 is a broken perspective view of one of the braces interposed between the corners of the air-eduction flue and the corner air-induction flues.

Referring by letter to said drawings, A is the casing of our improved drier, which is preferably constructed of wood and is made rectangular in cross-section and of any desired height. The said casing is mounted on suitable supports B and is arranged above a receptacle C, which is designed to receive grain from the discharge-opening *a* in the lower end or bottom of the casing.

D is a partition within the casing, which serves to form a hopper to discharge through opening *a*, and also serves, in conjunction with the bottom and side walls of the casing, to form a hot-air chamber E.

F F′ are upright air-induction flues which communicate at their lower ends with the hot-air chamber E and extend to a point adjacent to the upper end or top of the casing, and G is a hot-air exhaust or eduction flue which occupies the vertical center of the drier and extends from a point adjacent to the lower end or bottom of casing A through the upper end or top thereof. This flue G has its lower end contracted or tapered, as best shown in Fig. 1, so as to afford ample space for the passage of grain between it and the partition D, and it is preferably made up of superposed sections *b*, jointed in a rabbeted manner, as best shown in Fig. 6. The air-induction flues F F′ are also made up of superposed sections *c*, each of the said sections with the exception of the uppermost one being provided at its upper end with an upwardly-extended metallic collar *d*, which receives the lower end of the next upper section after the manner shown.

Forming the air-eduction flue and the air-induction flues of detachably-connected superposed sections, as described, is highly advantageous because it permits of the flues being quickly and easily built of wood, which is the preferred material.

The air-induction flues and the air-eduction flue are suitably connected to the casing, and the latter flue is held in the vertical center of the casing by braces H H′, interposed between it and the flues F F′, respectively. The air-eduction flue is also secured in position and supported by braces H^2, which are disposed at opposite sides of and connected to its lower portion and are connected at their ends to opposite walls of the casing. All of the braces H H′ H^2 are beveled at their upper sides, as shown, and hence it will be seen that they will scatter the grain when it falls upon them, and thereby promote the drying of the same.

The walls of the flues F F′ G, as well as the partition D, are provided with apertures *e* for the passage of air, over which apertures are arranged guards *f*, of sheet metal or other suitable material. These guards serve to prevent the grain from lodging in and closing the apertures *e*, and those on the induction-flues F F′ also serve, by reason of their being flared toward their discharge ends, to spread the blasts of air through the falling grain.

I is an air-heating chamber which is connected with the open air and contains a steam-coil J or other suitable heater. K is a fan-chamber which contains a suitable fan L and is interposed between and connected with the air-heating chamber I and the hot-air chamber E of the drier. When steam is supplied

to the coil J and the fan L is rotated by a suitable motor, which we have not deemed it necessary to illustrate, a continuous blast of hot air will be forced into the chamber E. A portion of this blast of air will find its way through the apertures *e* in the partition D, while the remainder will pass up through the flues F F′ and escaping through the apertures *e* thereof will be discharged by the guards *f* into the grain falling between the induction-flues F F′ and the eduction-flue G. After passing through the said falling mass of grain the current or blast of air passes through the apertures in the walls of the eduction-flue G into said flue and is thereby conducted up and discharged into the open air. In this way a constant circulation or dissemination of hot air through the mass of falling grain is maintained and the thorough drying of the same is quickly effected.

M is a hopper disposed above the drier and having four (more or less) depending spouts *g* arranged to discharge into the casing between the air exhaust or eduction flue G and the air-induction flues F F′.

N is a conveyer arranged to discharge into the hopper M, and P is an endless elevator which is designed to raise grain from the receptable C and discharge it into the conveyer N after the usual well-known manner. This elevator P may be and preferably is of the ordinary construction, and we have therefore deemed it sufficient to illustrate it in dotted lines, with its upper portion broken away.

In the practice of the invention a blast of heated air is continuously supplied to the drier after the manner before described, and the elevator P is operated by a motor. (Not shown.) In consequence of this the grain as it falls from the drier into the receptacle C is raised and discharged into the conveyer N and again caused to pass through the drier. This operation is repeated until the grain is dried to the extent desired, when the elevator is stopped and the grain removed by any suitable means from the receptacle C.

It will be appreciated from the foregoing that, while very simple and inexpensive, our improved drier is calculated to quickly dry corn and other grains. It will also be appreciated that the apparatus as a whole is simple and durable, requires but a minimum amount of attention, and embodies no delicate parts such as are likely to get out of order after a short period of use.

Having thus described our invention, what we claim is—

1. A grain-drier comprising a casing having one or more inlets in its upper end and a central outlet in its lower end for grain, a downwardly and inwardly inclined partition serving in conjunction with the bottom and side walls of the casing to form a hot-air chamber, an upright air-exhaust flue occupying the vertical center of the casing and having openings for the admission of air and also having its upper end extended through the top of the casing and adapted to discharge into the open air, and a plurality of upright, air-induction flues grouped around the exhaust-flue and communicating at their lower ends with the hot-air chamber and having openings for the escape of air, substantially as specified.

2. A grain-drier comprising a casing having an inlet and an outlet for grain, an air-chamber therein, an upright air-exhaust flue arranged in the casing and having openings for the admission of air, and a plurality of air-induction flues grouped about the exhaust-flue and communicating at their lower ends with the air-chamber and having openings for the escape of air; the said flues being respectively formed of superposed sections joined together, substantially as specified.

3. In a grain-drying apparatus, the combination of a drier comprising a casing having an inlet in its upper end and an outlet in its lower end for grain, an air-chamber therein, an upright air-exhaust flue arranged in the casing and having openings for the admission of air, and a plurality of upright air-induction flues grouped about the exhaust-flue and communicating at their lower ends with the air-chamber and having openings for the escape of air, a receptacle arranged to receive from the outlet of the casing, a conveyer arranged to discharge into the inlet of the casing, and an elevator for raising the grain from the receptacle to the conveyer, substantially as specified.

4. A grain-drier comprising a casing having one or more inlets in its upper end and a central outlet in its lower end for grain, a downwardly and inwardly inclined partition serving in conjunction with the bottom and side walls of the casing to form a hot-air chamber, an upright air-exhaust flue occupying the vertical center of the casing; said flue being made up of superposed sections joined together and having openings for the passage of air and downwardly-disposed guards arranged over said openings, a plurality of upright air-induction flues grouped around the exhaust-flue and communicating at their lower ends with the hot-air chamber; said induction-flues being made up of superposed sections and having openings for the passage of air and downwardly-disposed guards arranged over said openings, braces interposed between the exhaust and induction flues and having their upper sides beveled, and braces connected to the casing and the exhaust-flue so as to support the latter and having their upper sides beveled, substantially as specified.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

MARTIN SORLLE.
HENRY JAMES BAILEY.

Witnesses:
OLIVER CALDWELL,
L. EBERT.